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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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2664	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/558,693	MA, QINGMING	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Detailed Action

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-32 and 35-38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 9, 13, 21, 25, 37 and 38 recite the limitation "the next hop." There is insufficient antecedent basis for this limitation in the claim.

Claims 5-6, 11, 17-18, 23, 29-30 and 35 recite the limitation "the internet protocol address" one lines 2-3 of the claims. There is insufficient antecedent basis for this limitation in the claim. For examination purposes the claims will be read as "the addresses," in place of "the internet protocol addresses."

Claims 4, 7, 11-12, 17, 19, 23-24, 29, 31 and 35-36 recite the limitation "the nodes" on line 3 of the claims. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351 (a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 9, 13-14, 21, 25-26, 33 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Chuah et al. (U.S. Patent 6,408,001).

Regarding claims 1, 13 & 37, Chuah teaches of a method and means for routing a data packet through and explicit path in a data communications network (see col. 1, lines 49-53 and 5860; col. 2, lines 37-40) where a data packet is received in a first communications device ("label switched router," see LSR-7 of Figs. 4 and 8). Chuah teaches of network routers performing label swapping and look-up table operations. Although Chuah does not explicitly show a receiving device performing a look-up table function using a global path identifier ("label") it is inherent in the teachings that this function be performed to provide a label-switched path, by each router maintaining look-up tables used to quickly process packets (see col. 3, lines 4-7). Therefore, packets provided with a global path identifier ("label") indicating they are to transmitted along an explicit path would have their identifiers indexed into a look-up (see col. 5, lines 24-26) table

to quickly fetch the outgoing identifier and next hop for the packet, thus avoiding time consuming calculations per packet (see col. 1, lines 60-67). Chuah further teaches of calculating (see col. 15, lines 36-57; Fig. 11 steps 1110, 1120, 1130 and 1140) a new path identifier (see "label," Fig. 11, steps 1115, 1125, 1135 and 1145) for a data packet as a function of the destination IP address (see col. 15, lines 36-39) and a port on the network device receiving the data packet ("packet originating source," see col. 15, lines 54-57), where the destination IP address is determined through the global path identifier ("label") in the case where destination IP address are omitted from packets to eliminate overhead (see col. 11, line 64 - col. 12, line 7; col. 8, lines 30-38). Chuah further teaches of forwarding the packet to the next hop (see LSR-1 and 3 of Fig. 8; col. 11, lines 34-48).

Regarding claims 2 & 14, Chuah further teaches of two explicit paths that merge at a network node sharing a single outgoing global path identifier (see "label 7," 3 and 6 of Fig. 8). Chuah further teaches of allowing a router to maintain a smaller number of labels in the look-up table (see col. 2, line 66 - col. 3, line 9) by the merging of explicit paths through the sharing of global path identifiers (see col. 2, lines 45-59). Although not Chuah fails to explicitly teach the two explicit paths sharing the same entry in the forwarding table of all downstream nodes, it is inherent in the design since the packets belonging to the two explicit paths now share the same global path identifier ("label").

Regarding claims 9, 21, 33, & 38, Chuah teaches of a method and means for routing a data packet through and explicit path in a data communications

network (see col. 1, lines 49-53 and 5860; col. 2, lines 37-40) where a global path identifier ("label") is assigned to an explicit path through the data communications network (see col. 15, lines 36-42 and 64-67) and inserted to the data packet (see col. 11, lines 36-46; Fig. 8). Chuah further teaches of the invention utilizing the MPLS (Multi-protocol label switching) standard developed by IETF (Internet Engineering Task Force; see col. 5, lines 5-12). The MPLS standard teaches of tagging or labeling packets belonging to a flow of a plurality of packets to enable a router to quickly determine (see col. 5, lines 15-23) the next hop to which to forward the packet.

Regarding claim 25, teaches of a method and means for routing a data packet through and explicit path in a data communications network (see col. 1, lines 49-53 and 58-60; col. 2, lines 37-40) where a data packet is received in a first communications device ("label switched router," see LSR-7 of Figs. 4 and 8). Chuah teaches of network routers performing label swapping and lookup table operations. Although Chuah does not explicitly show a receiving device performing a look-up table function using a global path identifier ("label") it is inherent in the teachings that this function be performed to provide a label-switched path, by each router maintaining look-up tables used to quickly process packets (see col. 3, lines 4-7). Therefore, packets provided with a global path identifier ("label") indicating they are to transmitted along an explicit path would have their identifiers indexed into a look-up (see col. 5, lines 24-26) table to quickly fetch the outgoing identifier and next hop for the packet, thus avoiding time consuming calculations per packet (see col. 1, lines 60-67). Chuah further

teaches of calculating (see col. 15, lines 36-57; Fig. 11 steps 1110, 1120, 1130 and 1140) a new path identifier ("label," Fig. 11, steps 1115, 1125, 1135 and 1145) for a data packet as a function of the destination IP address (see col. 15, lines 36-39) and a port on the network device receiving the data packet ("packet originating source," see col. 15, lines 54-57), where the destination IP address is determined through the global path identifier ("label") in the case where destination IP address are omitted from packets to eliminate overhead (see col. 11, line 64 - col. 12, line 7; col. 8, lines 30-38). Chuah further teaches of forwarding the packet to the next hop (see LSR-1 and 3 of Fig. 8; col. 11, lines 34-48). Chuah further teaches of devices that are capable of providing the functionality of the above disclosed system and method (see col. 17, lines 36-67). Although Chuah does not explicitly identify the apparatus (input interface, examination logic, assignment logic, and forwarding logic) it is inherent in the design that the system and method disclosed by Chuah include such apparatus in order to carry out the inventions functions (see col. 17, lines 36-67).

Regarding claim 26, Chuah further teaches of two explicit paths that merge at a network node sharing a single outgoing global path identifier (see "label 7," 3 and 6 of Fig. 8). Chuah further teaches of allowing a router to maintain a smaller number of labels in the look-up table (see col. 2, line 66 - col. 3, line 9) by the merging of explicit paths through the sharing of global path identifiers (see col. 2, lines 45-59). Although not Chuah fails to explicitly teach the two explicit paths sharing the same entry in the forwarding table of all

downstream nodes, it is inherent in the design since the packets belonging to the two explicit paths now share the same global path identifier ("label").

Regarding claim 33, Chuah further teaches of devices that are capable of providing the functionality of the above disclosed system and method (see col. 17, lines 36-67). Although Chuah does not explicitly identify the apparatus (assignment circuitry, identifier insertion circuitry and hop selection circuitry), it is inherent in the design that the system and method disclosed by Chuah include such apparatus in order to carry out the functions of the invention (see col. 17, lines 36-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained Although the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3-4, 10, 15-16, 22, 27-28 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuah et al. (U.S. Patent 6,408,001) in view of Belser et al. (U.S. Patent 6,151,324).

Chuah teaches of appending the global path identifier to the IP packet so that the nodes (LSR's) can route the packet along the explicit path on the data link layer (layer 2), rather than inserting it in the IP packet for processing on the network layer (layer 3). Therefore Chuah fails to explicitly teach of the method of

inserting the global path identifier in an Internet packet. Belser teaches of a method of transmitting packets along an explicit path (see col. 1, line 66 - col. 2, line 4) by removing fields of the layer 2 header ("MAC") and replacing (see col. 2, lines 42-46) it with a global path identifier ("virtual path ID," see col. 2, lines 38-40). Belser further teaches of employing the disclosed invention on using layer 3 protocols (network layer, see col. 11, lines 13-21). An example of a network layer protocol is the Internet Protocol (IP), which Belser teaches of using (see col. 6, lines 24-27). Although not explicitly shown, it is inherent that if the disclosed method of explicit path routing is employed on the network layer, a global path identifier ("virtual path ID" or a layer 3 equivalent) will be inserted in an IP packet. At the time of invention it would have been obvious to one of ordinary skill in the art to include Belser's method of inserting a global path identifier into an IP packet in the system of Chuah. One of ordinary skill in the art would have been motivated to do this so that the nodes could perform explicit path switching on the network layer (layer 3), thus providing a greater range of services (see Belser col. 11, lines 18-21).

5. Claims 5-6, 11, 17-18, 23, 29-30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuah et al. (U.S. Patent 6,408,001) in view of Picard (U.S. Patent 5,477,536).

Chuah fails to explicitly teach of calculating the global path identifier by performing the bit-wise exclusive-or (XOR) function of the address of the nodes comprising the explicit path. Picard teaches of a method of explicit path routing

(see col. 1, lines 42-47) in which a global path identifier (see "RL," col. 2, lines 5-6) is calculated (see "combining means," col. 2, lines 2-6; col. 3, lines 37-61) by performing the bit-wise XOR (see col. 3, lines 46-48) of the node addresses (where input/output port address of the nodes are interpreted as node addresses) comprising the explicit path (see col. 1, line 59 - col. 2, line 1). At the time of invention it would have been obvious to one of ordinary skill in the art to include Picard's method of calculating a global path identifier in the system of Chuah. One of ordinary skill in the art would have been motivated to do this so that compact routing information (see Picard col. 1, lines 48-52) allowing transmission on an explicit path can be provided, reducing overhead and increasing throughput.

6. Claims 7-8, 12, 19-20, 24, 31-32 & 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuah et al. (U.S. Patent 6,408,001) in view of Belser et al. (U.S. Patent 6,151,324), and in further view of Picard (U.S. Patent 5,477,536).

Chuah and Belser fail to explicitly teach of calculating the global path identifier by performing the bit-wise exclusive-or (XOR) function of the address of the nodes comprising the explicit path. Picard teaches of a method of explicit path routing (see col. 1, lines 42-47) in which a global path identifier (see "RL," col. 2, lines 5-6) is calculated ("combining means," see col. 2, lines 2-6; col. 3, lines 37-61) by performing the bit-wise XOR (see col. 3, lines 46-48) of the node addresses (where input/output port address of the nodes are interpreted as node addresses) comprising the explicit path (see col. 1, line 59 - col. 2, line 1). At the time of invention it would have been obvious to one of ordinary skill in the art to include Picard's method of calculating a global path identifier in the system of Chuah. One of ordinary skill in the art would have been motivated to do this so that compact routing information (see Picard col. 1, lines 48-52) allowing transmission on an explicit path can be provided, reducing overhead and increasing throughput.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 4,794,594 to Picard

U.S. Patent 6,091,725 to Cheriton et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

RICKY NGO
PRIMARY EXAMINER

KDM
Art Unit 2664